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ON THE IDENTITY OF *DROSERA BREVIFOLIA*

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THE PRINCIPLE OF TYPIFICATION of the names of plants or of groups of plants as now embodied in the International Code of Botanical Nomenclature offers one of the best pathways to nomenclatural stability, for only by typification can the application of names be fixed precisely. Once all plant names have been typified accurately, a major source of nomenclatural instability will have been eliminated, since many of the changes which still have to be made are the result of either lack of typification or inaccurate typification. Hasty or careless typification, however, can introduce confusion and provide justification for the accusation that taxonomists are continually changing the names of plants (presumably just for the joy of changing).

This paper is an outgrowth of both a long-standing interest in *Drosera* and work on a generic flora of the southeastern United States.¹ It seems to me to have grown to be very long for its limited title. However, a number of well-known names, of which *Drosera brevifolia* is one, have been upset recently on more or less capricious grounds. I have therefore gone in some detail into the background and typification of this name in the hope of settling its status finally. One can have no objections to changing a name if this is clearly necessary, but it is irresponsible and not in the interests of taxonomy to overthrow current usage of a name when the full evidence is not available.

For more than a hundred years, the name *Drosera brevifolia* Pursh was applied consistently to a distinctive American species characterized by its annual habit; cuneate, short-petiolate, exstipulate leaves; gland-tipped hairs on scapes, pedicels, and calyces; relatively large corollas (for sect. *Drosera*) mostly 1–1.6 cm. across; and generally obovoid seeds with 10–12 longitudinal rows of shallow pits (formed by the collapse of the outer wall of individual large cells of the outer seed coat). In the United States it occurs primarily in moist, acid, sandy soils on the Atlantic and Gulf

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coastal plains from southeastern Virginia to southern Florida, westward through Alabama, Mississippi, and Louisiana, to Arkansas, southeastern Oklahoma, and eastern Texas. Disjunct stations occur in northern Alabama and Tennessee. In the eastern part of this range the petals are white; in at least Tennessee and Louisiana populations with both white-flowered and pinkish- to rose-purple-flowered plants are known; and in Texas, Arkansas, and Oklahoma white-flowered plants apparently are unknown. Many of the plants from this westernmost part have flowers of reduced size which may open only partly or hardly at all, strongly suggesting self-pollination, or even cleistogamy, linked with the less favorable rainfall conditions of this area. These western populations are thought by some to represent a distinct species, *D. annua* Reed (Torreya 15: 246. 1915). *Drosera brevifolia* also occurs disjunctly in southern Brazil, Paraguay, Uruguay, and northeastern Argentina, where both the white and rose-purple forms occur (cf. G. Dawson, Revista Argent. Agron. 5: 231-239. 1938, and notes on herbarium specimens). Originally described as *D. maritima* St. Hil. (Hist. Pl. Remarq. Brés. Parag. 264. 1825), these populations have long been recognized as being conspecific with the plant of the southeastern United States. White-flowered plants of this species are known from Oaxaca, Mexico (*Galeotti* 7246 [G]), and, to judge from the description, *D. chiapasensis* Matuda (Anal. Inst. Biol. Méx. 27: 362. 1957), described from the state of Chiapas, Mexico, most probably represents additional disjunct populations of the same plant. (Such wide disjunctions also occur in the ranges of *D. intermedia* Hayne [Europe, from the Caucasus, northward to Finland and Sweden, and westward to Portugal and Ireland; eastern North America; Cuba and Hispaniola; Suriname, British Guiana and Trinidad; and southern Brazil and Paraguay] and in *D. capillaris* Poir. [see below]. It is also notable that in various parts of the ranges of these species petal-color varies in the former from white to pink or purple, and in the latter from pink to white or *vice versa*, paralleling the situation in *D. brevifolia*.)

In 1962, in an unnecessarily ill-humored paper on *Drosera* in the southeastern United States (Sida 1: 53-59), Lloyd Shinnars argued that the plant described by Pursh is not the species which has been known for so long as *Drosera brevifolia* but is instead *D. capillaris* Poirét, another well-marked species described from the southeastern United States. Since Shinnars recognized both *D. maritima* (of which he saw only five individuals, one sterile) and *D. annua* as distinct species, and there is no other name available (unless it be *D. chiapasensis*, of which he seemingly was unaware), he redescribed the plant of the Atlantic Coastal Plain of the southeastern United States as *D. leucantha* Shinnars. The holotype was given as *Cronquist* 5255 (SMU) (apparently an error for 4255, the number on isotypes in GH and NY), from Glynn County, on the coast of Georgia. Unfortunately, his conclusion was too hastily arrived at and was based on inadequate evidence. It is quite unnecessary to abandon the well-established *D. brevifolia* Pursh.

Since *Drosera capillaris* Poir. is also involved, the account which follows deals first with the typification of that species to eliminate any question

of its identity, and then with the selection of a lectotype for *D. brevifolia* Pursh.

Drosera capillaris Poiret in Lamarck, Encycl. Méth. Bot. 6: 299. 1804.

Poiret's Latin diagnosis reads, "*Drosera* scapis radicatis, capillaribus, paucifloris, glabris; foliis spathulatis, petiolatis. (N.)." In the discussion he says that this species should be distinguished from *Drosera longifolia* L., which in his sense included both *D. longifolia* (*D. anglica* Huds.) and *D. intermedia* Hayne (1800). He notes the spatulate leaves, rather long petioles "enlargis insensiblement à leur partie supérieure," and the small, nearly sessile, very glabrous flowers. He further notes, "Cette plant croît à la Caroline; elle m'a été communiquée par M. Bosc, qui en a fait la découverte. (V. s.)." Nothing else in the description can be regarded as of diagnostic value. The slender, glabrous scape and small, glabrous flowers are characteristic features of this species as usually understood. Spatulate leaves in combination with glabrous scapes may also suggest *D. intermedia*, which occurs in the same area of the Coastal Plain of the southeastern United States. The leaf blades of *D. capillaris* are characteristically almost orbicular, tapering abruptly into the petiole, but some individuals, presumably in response to varying ecological conditions, have distinctly spatulate blades gradually tapering into the long petiole. Plants with leaves of the latter kind are sometimes misidentified as *D. intermedia*, although the quite different seeds and the distinctive inflorescences of *D. intermedia* (curving outward and often downward at the base before becoming erect, in contrast with the strictly erect inflorescences of *D. capillaris*) provide ready characteristics for distinguishing between the two. Fortunately, the spatulate leaves of the description need introduce no doubts as to the application of the name, for there is a type specimen.

In early July, 1964, through the courtesy of Prof. A. Aubréville, director of the Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, Paris, and with the kind help of Mlle Alicia Lourteig, I was able to locate the holotype of *Drosera capillaris*. According to the labels on the sheet, the specimen passed in turn from Poiret to Moquin-Tandon, to Cosson, to [Ernest] Durand, and finally to its present location in the general phanerogamic herbarium of the Muséum. It is a single skimpy plant bearing seven leaves and a scape 15 cm. long with four mature or nearly mature fruits, the seeds from one of which have been removed by a previous worker and placed in a small packet on the sheet. The conspicuous stipules; the long, slender, straight, glabrous scape; the glabrous calyces; and the seeds with longitudinal rows of papilliform cells all testify that this name is being applied correctly.

The label reads:

Drosera capillaris. (n.)

dict.

an *Dr. longifolia*? Mich. non Lin.

bosc.

caroline

herb. Poiret [in another hand]

This species is currently known to occur from southeastern Virginia, southward along the Atlantic Coastal Plain to southern Florida and westward along the Gulf Coastal Plain to eastern Texas; in the states of Veracruz and Tabasco, Mexico, and in British Honduras; in eastern and western Cuba and in Jamaica; and in Suriname, British Guiana, and Trinidad. Reaffirming the importance of seed characteristics as the most constant and reliable specific characters in this vegetatively plastic genus, C. H. Brummer-Dinger has shown that the later-described *Drosera tenella* Willd. is conspecific with *D. capillaris* (Acta Bot. Neerl. 4: 136-138. 1955). The petal color of *D. capillaris* is rose-pink to almost white in the United States, and has been recorded as white or pink in British Honduras and in Cuba.

Drosera brevifolia Pursh, Fl. Am. Sept. 1: 211. 1814.

Pursh's description reads:

3. *D. pusilla*; scapis radicatis simplicibus, foliis brevibus *brevifolia.*
cuneatis vix petiolatis, petalis ovalibus.
In sandy swamps of Georgia. Enslen. June. *v. s.*
in Herb. Enslen. The smallest of all the species
known; flowers rose-coloured.

All of the Latin diagnosis applies to the plant with which this name has long been associated. It can be argued that it can also apply to *Drosera capillaris* Poir., and, indeed, a part of it can. However, the short, cuneate, scarcely petiolate leaves described are not at all those of *D. capillaris*, in which the petiole is quite distinct and usually very much longer than the almost orbicular to obovate-spatulate blade. (Cf. *D. capillaris* above.) Of all the species of the southeastern United States, the leaves described by Pursh are most nearly those of the plant long known as *D. brevifolia*.

The petal color of this same plant, however, is generally white in populations from the Atlantic Coastal Plain, whereas that of *Drosera capillaris* is generally pale pink to rose. (A collection of *D. capillaris* from Louisiana, *Shinners 23514*, carries the comment "petals nearly white, with pink tinge," and both pink- and white-flowered plants occur elsewhere.) I have seen pink-tinged petals on the plant in question (*D. brevifolia*) in North Carolina (*Wood 8500, Channell & Rock [GH]*), an occasional collector notes "petals white, turning pink on drying" (cf. *Cooley & Eaton 5777 [GH]*), and the petals of many herbarium specimens are pink, white with pink tips (cf. *Kral 6428 [GH]*), or brown with suggestions of pink. If herbarium specimens were entirely without notes on flower color (and the majority are), one might conclude, depending upon the age of the specimen and conditions of drying, that the plant is pink, white, or yellow flowered. On these grounds, and especially since Pursh saw only dried specimens, one is justified in questioning whether the pink color noted in Pursh's description is necessarily associated with *D. capillaris*, rather than with the cuneate-leaved plant of the Latin description.

After considering these possibilities in the course of preparing an account of the Sarraceniaceae and Droseraceae for a generic flora of the southeastern United States (Jour. Arnold Arb. 41: 152-163. 1960), I had concluded that the entire description best fitted herbarium specimens of the cuneate-leaved, exstipulate, white-flowered, glandular-scaped plant. In the event that a mixture with *D. capillaris* was involved, it seemed that greater weight should be given to the Latin diagnosis than to the single comment on flower color, and that this procedure was consistent with the recommendations on typification in the International Code of Botanical Nomenclature. It seems particularly in the spirit of Recommendation 7B, then in Appendix IV (ICBN, ed. 1956, p. 294), but now included in both the "Guide for the determination of types" (ICBN, ed. 1961, p. 65) and the main body of the Code (p. 20): "Whenever the original material is heterogeneous, the lectotype should be so selected as to preserve current usage unless another element agrees better with the original description and (or) figure." Thus I continued to apply the name *Drosera brevifolia* in its usual sense and, because of the press of other work on the generic flora, did not attempt to typify it further.

Shinners (*loc. cit.* 55) came to quite a different conclusion: "Without seeing the type (location unknown; possibly not in existence; Diels cites another Enslen specimen bearing no locality beyond Southern U. S.) there may be a little doubt as to what Pursh had, since the description says nothing about pubescence on the scape (though failure to mention it suggests there was none) or presence of stipules. Pursh listed only four species, the other three being *D. rotundifolia*, *D. longifolia*, and *D. filiformis*; he makes no mention of *D. capillaris*. But his statements 'smallest of the species known; flowers rose-coloured' apply exactly to *D. capillaris* among the Southeastern species. The words cannot possibly refer to the plant with large, white flowers which Chapman and later authors mistakenly have called *D. brevifolia*. The phrase 'foliis brevibus cuneatis vix petiolatis' of course excludes *D. filiformis*, and makes both the very long-petioled *D. intermedia* and the round-leaved *D. rotundifolia* very unlikely candidates. Enslen collected in Lower Georgia, which I take to mean the Coastal Plain. The only species in this area to which Pursh's description reasonably applies is *D. capillaris*."

This conclusion does not seem to be very well founded. "Smallest of the species known" applies to plants, not flowers, as Shinners implies, and fits better the glandular-scaped plant than *Drosera capillaris*, although either may flower at small size. "Foliis brevibus cuneatis vix petiolatis" does not apply to *D. capillaris* with its well-developed petioles, but to the species which has been known for so long as *D. brevifolia*; furthermore, the argument based on flower color does not necessarily hold. The description can apply in its entirety to the white-flowered, cuneate-leaved, exstipulate, glandular-scaped plant, but not to *D. capillaris* or any other species of the southeastern United States. On the basis of the description alone there is little justification for assigning the name *D. brevifolia* to the synonymy of *D. capillaris*.

In the hope of resolving the question, I have sought to locate the Enslen collections on which Pursh based his description and to typify *Drosera brevifolia* by a specimen.

In the preface to his *Flora Americae Septentrionalis* Pursh discusses some of the sources of his specimens and information. On page xii he writes, "While I was thus engaged in describing and figuring those new acquisitions to the American Flora [the specimens from the Lewis and Clark Expedition], another opportunity offered to augment my resources. Mr. Aloysius Enslen, who had been sent to America by Prince Li[e]chtenstein of Austria, as a collector of new and interesting subjects of natural history, returned to Philadelphia from his extensive travels through the Western Territories and Southern States. This gentleman, with whom I had previously been on terms of intimate friendship, was now in possession of an extremely valuable collection of living and dried plants, to which I had unrestrained access. To his liberality I am indebted for many new and scarce specimens, which filled up a desideratum in my collection, particularly in the plants of Lower Louisiana and Georgia. Those species exclusively received from his collection I have distinguished by 'v. s. in Herb. Enslen.' "

Little is recorded about Aloysius Enslen and his activities in the United States, but a few comments and clues are scattered through Pursh's *Flora*, in the correspondence or publications of Enslen's contemporaries, and in various other places. Professor Joseph Ewan, of Tulane University, whose scholarly and fascinating studies of the Pennsylvania botanists of this period have cleared up many botanical mysteries, has most generously shared all the bits of information about Enslen he has accumulated in the course of his extensive research.

The information in the next three paragraphs is entirely from his notes or published papers; most of the documentation is omitted here, for he will present this material later in another context. The data about Pursh, Barton, Lambert, and their collections are drawn from either Prof. Ewan's studies (Frederick Pursh, 1774–1820, and his botanical associates. *Proc. Am. Philos. Soc.* 96: 599–628. 1952) or those of the late F. W. Pennell (The elder Barton — his plant-collection and the mystery of his floras. *Bartonia* 9: 17–34. 1926; Benjamin Smith Barton as naturalist. *Proc. Am. Phil. Soc.* 86: 108–122. 1942; Historic botanical collections of the American Philosophical Society and the Academy of Natural Sciences of Philadelphia. *Ibid.* 94: 137–151. 1950).

Enslen apparently arrived in America at the expense of Prince Liechtenstein about 1800 (1799–1801). He set up a garden in Philadelphia to grow plants which would either be collected by himself or acquired from others (see especially John Lyon; cf. Ewan & Ewan, *Trans. Am. Philos. Soc.* 53(2): 10. 1963). These plants would be for reshipment to Vienna, not for public sale. It is known that he was in Savannah in at least 1804 and that he collected between Savannah and Louisville, Georgia. He traveled to New Orleans, evidently following the Coweta Falls trail from Augusta, Georgia, *via* Mitchell, Macon, and Cowetatown (near Columbus).

He also met the entomologist and artist John Abbott in Georgia, and Alexander Wilson cites him in his *American Ornithology*. In 1806, he traveled to St. Louis *via* Pittsburgh, and he at least intended to travel beyond with the Osage Indians. In 1809, Henry Muhlenberg wrote to Stephen Elliott of his visit to Enslen's growing garden where he was cultivating a number of Georgia plants. On December 17 of the following year Muhlenberg wrote to Elliott: "Mr. Enslen [sic] is almost gone & past recovery of a consumption" (quoted by Ewan & Ewan, *loc. cit.* 14).

"There is evidence that [John] Lyon and Enslen . . . traded nursery stocks during the years of their activities in Philadelphia. Lyon is credited with the introduction of the copper-colored *Iris fulva* into English gardens in 1812. This plant Enslen had discovered in the marshes near New Orleans. [See Pursh, *Fl. Am.* Sept. 1: 30, under *I. cuprea*.] Pursh acquired specimens from both Lyon and Enslen; and in at least one instance, *Sida hispida*, he credited to Lyon a collection almost certainly taken by Enslen" (Ewan & Ewan, *loc. cit.* 10).

There is nothing to show that Enslen ever returned to Vienna after coming to America, but a large number of living plants (ca. 1000 species) and herbarium specimens (representing ca. 670 species) reached there. The latter are incorporated in the herbarium of the Naturhistorisches Museum, Vienna. All are without data and bear labels wholly in the handwriting of Leopold Trattinick (1764–1849), who presumably discarded any original labels. Trattinick was curator of the herbarium in Vienna at the time Enslen's plants were being studied by Pursh.

In addition to these specimens, there are 69 Enslen collections, also without data, in the herbarium of Benjamin Smith Barton, which is now at the Academy of Natural Sciences of Philadelphia (Pennell, 1950, p. 141). This herbarium, built up almost entirely between 1797 and 1807, is directly connected with Pursh, who was employed by Barton about 1805 and who made two collecting trips (1806, 1807) for him. Pursh was largely responsible for Barton's herbarium of about 2000 sheets, and 1149 of the 1674 sheets now in it were collected by him. Little or nothing was added to the herbarium after Pursh left Philadelphia and went to New York in the late autumn or early winter of 1807 (Pennell, 1942).

In the winter of 1811–1812, Pursh went to England, where, under the patronage of Aylmer Bourke Lambert (1761–1842), he prepared his flora for publication. The specimens he took with him (including, among others, many of his own collections from the trip of 1807 and some of those of the Lewis and Clark Expedition which had come to Barton for study in November, 1805) went to Lambert before Pursh left England in 1816 for Canada, where he died in 1820.

There appear, then, to be three possible sources for Enslen collections which Pursh might have used in drawing up his description of *Drosera brevifolia*: Lambert's herbarium; the herbarium of the Naturhistorisches Museum, Vienna; and the Benjamin Smith Barton herbarium in Philadelphia.

Upon Lambert's death in 1842, his large collection was broken up, sold

at auction, and widely dispersed. Most of the North American materials were bought by Edward Tuckerman (collections of Fraser, Bradbury, Nuttall, Lewis and Clark, etc.) and by Pamphlin (Pursh's own collections, largely from his trip of 1807). Tuckerman also bought a bundle of "Miscellaneous Plants, N. America, &c." which proved to include only Pursh collections (cf. Ewan, 1952). The specimens bought by Tuckerman are now at the Academy of Natural Sciences of Philadelphia, while those bought by Pamphlin are in the herbarium of the Royal Botanic Gardens, Kew (*vide* Ewan). Other parts of Lambert's collections, including the important Ruiz and Pavon specimens which went to the British Museum (Natural History), are preserved in various herbaria, but a large part seems to have disappeared.

There are no Enslen specimens among the materials from the Lambert herbarium now in Philadelphia, nor was I able to locate any at either Kew or the British Museum (Natural History) in the summer of 1964. I also checked hopefully, but without success, the collections of the Conservatoire Botanique, Geneva; those of the Botanical Museum and Herbarium, Copenhagen; and, insofar as possible, those of the Muséum d'Histoire Naturelle, Paris. Enslen collections apparently are known only in Vienna and Philadelphia. If, however, an Enslen specimen of *Drosera brevifolia* from Lambert's (hence Pursh's) herbarium should be found, it would take precedence over others in the typification of the name.

Professor K. H. Rechinger, director of the Naturhistorisches Museum, Vienna, has kindly sent on loan Enslen's specimens of *Drosera* preserved there. There are four large, gray sheets ca. 32 × 48 cm. which dwarf even more the small plants on them. The labels written by Trattinick bear only a name and "Amer. bor. Enslen." The first sheet, labeled "*Drosera brevifolia*," has six specimens of the cuneate-leaved, glandular-scaped plant which is usually known by this name. It was annotated by Diels as *D. brevifolia* during the preparation of his treatment of the Droseraceae for *Das Pflanzenreich* (IV. 122(Heft 26): 1-136. *map.* 1906) and is presumably the collection cited by him (p. 90) and mentioned by Shinnars. The second sheet, with two specimens of this same species, is labeled "*Drosera brevifolia* *a.* flor[i]b[us] albis Tratt[inick]." The third, also bearing two specimens of this species, is labeled "*Drosera brevifolia* *β.* florib[us] roseis Tratt." The fourth, labeled "*Drosera cuneifolia glabrata* Tratt.," was annotated by Diels as *D. cuneifolia* Thunb., certainly a lapse on his part, since he undoubtedly knew better and later cited only South African specimens in *Das Pflanzenreich*. The two specimens on it are *D. capillaris*, neither with open flowers. Seven of the ten plants of the other species have open but badly pressed flowers. The petals of all are brown with age.

The Barton herbarium in Philadelphia also contains an Enslen collection of *Drosera* which was located for me by Dr. W. R. Ernst. The single sheet, which I have since seen in Philadelphia, bears two small specimens: to the left, a plant of *Drosera capillaris*, and to the right a flowering plant of *D. brevifolia*. On the label is written only "*Drosera cuneifolia*" (which

one suspects may have been the name on the original labels of the Enslen specimens in Vienna) and "Mr Enslen" in two different handwritings which I have not identified. Again, the flower color is impossible to determine, but the size of the flower clearly shows that it was not one of the short-petaled forms from the western part of the range of the species.

From these specimens in Vienna and Philadelphia it seems that Enslen's material was a mixture of *Drosera capillaris* and the cuneate-leaved plant with glandular scapes, with a great predominance of the latter. To judge from the size of the three specimens of *D. capillaris* (scapes 15–20 cm. long), it is most likely that Pursh's "D. pusilla" and "smallest of all the species known" are derived from the other species, for the ten plants in Vienna are only three to five centimeters tall, while that in Philadelphia is seven.

Trattinick's sorting of Enslen's collections shows that he thought some plants to be white, others to be pink flowered. His third category without indication of color suggests that he was uncertain of the flower color of these specimens. Pursh's "flowers rose-coloured" may once again be explained as applying either to plants of *D. capillaris*, to white-flowered plants of the second species, the petals of which turned pink in drying, or to pink- to rose-purple-flowered plants of the same species from the western part of the range. Since Enslen is known to have collected in southeastern Georgia where both species occur and since Pursh attributed the specimens to "sandy swamps of Georgia," it would seem that the last possibility is the least likely of the three, especially when the flower size is also considered.

Of the two species involved, one, *Drosera capillaris*, had already been named when Pursh described *D. brevifolia*. Pursh's description best fits the new element, and the name has been applied in that sense for more than a hundred years. A specimen of that element, therefore, should be used in typifying the name, in accordance with Recommendation 7B of the International Code. There is no reason for interpreting *D. brevifolia* as a synonym of *D. capillaris*, and there is no obstacle to the continued use of the former name.

In the absence of a specimen from Pursh's herbarium, it seems best to select as lectotype the right-hand plant on the sheet in Barton's herbarium in the Academy of Natural Sciences of Philadelphia, for this is more clearly associated with Pursh than is any part of the material sorted by Trattinick in Vienna, although, as Pursh's comments suggest, he may well have seen much of that material. It is certain that Pursh saw all of the specimens that went into Barton's herbarium, for he was largely responsible for the care and development of it, and little or nothing was added to it after he left Philadelphia in 1807. The specimen in the Barton Herbarium is linked with Pursh and will serve adequately as a lectotype. Since it was said to have come from Georgia and since Enslen is known to have collected in southeastern Georgia, this plant should be taken as the white-flowered form which occurs there.

Since I have not yet seen material of *Drosera chiapasensis*, the detailed

taxonomy of *D. brevifolia* (including *D. maritima* and *D. annua*) will be dealt with at another time, but it should be noted again that in what I regard as a single well-marked species Dr. Shinnars sees three. To show the basis for his conclusion, his comparisons of *D. brevifolia* (*D. leucantha*) with *D. annua* and of *D. maritima* with *D. annua* are summarized in tabular form below. He did not give any comparison of *D. maritima* with *D. brevifolia*, with which it has long been considered conspecific.

<i>D. BREVIFOLIA</i> (<i>D. leucantha</i>)	<i>D. ANNUA</i>
Petals 5, pure white, 5–10 mm. long	Petals 1–5, light to deep lavender-pink, 2.5–8 mm. long
Sepals 3–4.5 mm. long	Sepals 2.5–4 mm. long
<i>D. MARITIMA</i> (based on 4 plants)	<i>D. ANNUA</i>
Naked portion of scape 1.5–2.5 (rarely –4) times as long as leaves	Naked portion of scape 2.5–7 times as long as leaves
Sepals obtuse or subacute	Sepals subacute or acute
Lowest pedicel 1–3.5 mm. long	Lowest pedicel 1–5 mm. long

Writing of *Drosera annua* and *D. maritima*, Shinnars says (*loc. cit.* 56), "These differences may appear slight. But considering how closely herbarium specimens of *D. annua* and *D. leucantha* may resemble each other when well-opened flowers and color data are lacking, while live plants could not possibly be confused, I prefer to treat the North and South American plants as two species. Some rather robust specimens collected by Dr. B. C. Tharp on Padre Island, Texas, greatly resemble the South American species. At the other extreme, collections made by Dr. H. K. Svenson in Coffee and Franklin Counties, Tennessee [where both white- and purple-flowered plants occur in the same populations; cf. *Svenson 9974*], are exceptionally small."

These differences do indeed appear to be slight, and measurements based on larger numbers of specimens make them appear even slighter, particularly when the specific differences between the other American species of *Drosera* are considered. Petal color (essentially presence or absence of anthocyanin) as a primary specific difference is not very convincing, especially when populations with both white- and purple-flowered forms are known (Tennessee; Louisiana), when both white and rose-purple forms are known in South America, and when similar color shifts occur within such well-marked species as *Drosera intermedia* and *D. capillaris*. Neither is it very convincing when, in a genus notable for its morphological plasticity, minor and almost completely overlapping size-differences in calyces, petals, and pedicels are used to distinguish species. Most lamentable of all is the lack of mention anywhere in his paper of the most dependable specific characters in the genus: the shape and markings of the seeds. This seems inexplicable, since Dr. Shinnars makes many references to Frances Wynne's paper on the North American species of *Drosera* (Bull. Torrey Bot. Club 71: 166–174. 1944) in which she stresses the usefulness of seed characters and illustrates the seeds of the North American species. Many botanists, beginning with Hayne (1800) and

continuing to such recent workers as Wynne, C. H. Brummer-Dinger (Acta Bot. Neerl. 4: 136-138. 1955), and Maguire and Wurdack (Mem. N. Y. Bot. Gard. 9: 331-336. 1957) have realized that seed characteristics are among the most useful and stable in this genus. It is unfortunate that seeds were not studied, for those of the three supposed species match one another well. Altogether it would seem that species based on such trivial differences as those used by Dr. Shinnars have very little to do with the concept of the species as a natural biological unit.